2784

First-line Treatment in Patients with Transplant-Ineligible, Newly Diagnosed Multiple Myeloma by Age, Frailty, and Comorbidity

Laura Hester[1], Rupa Makadia[2], Dmytro Dymshyts[3], Alana Del Campo[4], Dongyu Zhang[2], Thomas Renaud[2], Helen Pai[2]

[1]Johnson & Johnson, Horsham, PA, United States; [2]Johnson & Johnson, Raritan, NJ, United States; [3]Johnson & Johnson, Madrid, Spain; [4]Johnson & Johnson, Cambridge, MA, United States

Key Takeaway

Real-world treatment patterns in patients with TIE NDMM show channeling based on age, comorbidity burden, and frailty, suggesting trials including older, more comorbid and frailer patients should consider treatment patterns in these populations when selecting comparators.

Conclusions

In US claims data, Rd, Vd, VRd, DRd, and D-VRd accounted for 60 to 66% of first-line treatments received by patients with TIE NDMM since 2019.

Older patients and those with high comorbidity were more likely to be channeled away from triplet regimens (vs doublets), quad regimens (vs triplets), and lenalidomide-based regimens.

Severely frail patients tended to be prescribed doublet over triplet regimens, while those with any frailty were channeled into triplet over quad regimens.

Please scan QR code for

Poster

Supplementary material

The QR code is intended to provide scientific information for individual reference, and the information should not be altered or reproduced in any way.

Introduction

- Novel treatments offer hope for patients with newly diagnosed multiple myeloma (NDMM) who are ineligible for high-dose chemotherapy and hematopoietic stem cell transplantation (HSCT).
- Real-world data on current treatment patterns among transplant-ineligible (TIE) NDMM patients who are older or who have higher comorbidity burden or frailty can inform comparator selection for trials that include these populations.

Objectives

- To assess whether TIE NDMM patients in the US are channeled into the most common first-line regimens according to baseline characteristics, including age, frailty status, and comorbidity burden.
- To assess how use of the most common first-line regimens changes by age group in TIE NDMM patients in the US.

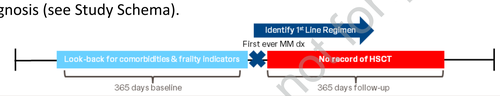
Methods

Data source

- Two US health insurance claims databases standardized to the OMOP Common Data Model[1]: Optum Clinformatics® Data Mart (Optum) (Jun 2019 – Dec 2024) and HealthVerity Comprehensive Claims (HV) (Jun 2019 – Apr 2025).

Study design and population

- Retrospective cohort analysis of patients with TIE NDMM, identified by first-ever MM diagnosis (ICD C90.00) with ≥365d continuous enrollment before and after diagnosis AND did not receive HSCT in the 365d after diagnosis.
- Comorbidity and frailty indicators were identified in the 365d prior to diagnosis (see Study Schema).



- Comorbidity burden was defined by the Charlson Comorbidity Index (CCI, Quan version mapped to SNOMED codes[2]).
- Patient frailty was evaluated using the Faurot Frailty Index[3], a proxy for frailty based on activities of daily living. Patients were classified into fit (<0.1), fit-frail (0.1-<0.2), frail (0.2-<0.4), severely frail (≥0.4).
- Treatment regimens were categorized using a line of treatment (LOT) algorithm for OMOP-standardized claims data[4].

Descriptive analysis

- Descriptive statistics were used to assess baseline characteristics.
- Standardized mean differences (SMD) were calculated to determine if specific age, comorbidity, or frailty groups were more likely to receive certain regimens (≥ 0.1 or ≤ -0.1 indicating meaningful difference).
- 20% change in regimen receipt between age groups was considered substantial.

Results

Study population baseline characteristics

- A total of 9,677 and 5,256 patients with TIE NDMM who received any 1L regimen were identified in HV and Optum, respectively (Table 1).
  - Patients in Optum were older than those in HV (86% vs 41% aged >65).
  - More than half of patients (58% HV, 64% Optum) had high comorbidity burden (CCI ≥ 3).
  - More than a quarter of patients (32% HV, 29% Optum) were classified with any frailty (i.e. fit frail, frail, severely frail).

Table 1: Baseline patient demographic and clinical characteristics

	HealthVerity N=9,677	Optum N=5,256
Age at index date, mean (SD), years	62.8 (13.4)	73.3 (9.2)
Age at dx >65 years, n (%)	3,923 (40.5)	4,545 (86.4)
Male, n (%)	5,310 (54.8)	2,766 (52.6)
Race, n (%)		
White	5,999 (61.9)	2,589 (49.2)
Black	1,839 (19.0)	922 (17.5)
Asian	345 (3.5)	114 (2.1)
Unknown	1,494 (15.4)	1,631 (31.0)
Ethnicity, n (%)		
Hispanic	1,715 (17.7)	488 (9.2)
Non-Hispanic	5,139 (53.1)	3,061 (58.2)
Charlson Comorbidity Index, n (%)		
CCI=0	1,564 (16.1)	669 (12.7)
CCI=1	625 (6.4)	338 (7.0)
CCI=2	1,882 (19.4)	870 (16.5)
CCI≥3	5,604 (57.9)	3,349 (63.7)
Faurot Frailty Index, n (%)		
Fit (<0.1)	5,647 (58.3	2,368 (45.0)
Pre-frail (0.1-<0.2)	1,762 (18.2)	901 (17.1)
Frail (0.2-<0.4)	729 (7.5)	388 (7.3)
Severely frail (≥0.4)	576 (5.9)	228 (4.3)
Unknown	961 (9.9)	1,371 (26.0)

First-line regimens among TIE NDMM

- The most common first-line regimens used by patients with TIE NDMM are presented in Figure 1.
  - Bortezomib (V), lenalidomide (R), dexamethasone (d)
  - Vd
  - Rd
  - Daratumumab+VRd (D-VRd)
  - DRd

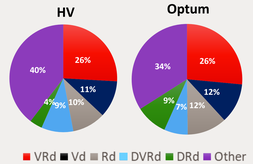


Figure 1: Percentage of all patients with TIE NDMM by first regimen received

Comparison of baseline characteristics by first-line regimen

- Similar first-line treatment patterns were observed in both the HV and Optum databases (Figures 2 & 3).
  - Patients receiving Vd were more likely to be aged >65 and have a higher CCI than those receiving Rd.
  - Patients receiving Rd vs VRd were more likely to be aged >65 and have higher frailty, particularly severe frailty.
  - Patients receiving Vd vs VRd were more likely to be aged >65, have CCI≥3, and have higher frailty, particularly severe frailty.
  - Patients receiving DRd vs D-VRd were more likely to be aged >65, have CCI≥3, and have any frailty.

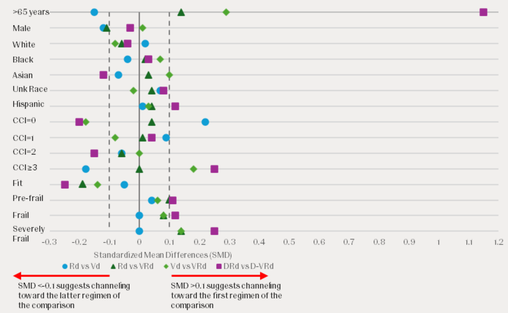


Figure 2: Love plot comparing baseline characteristics by first-line regimens in HealthVerity, where SMD>0.1 suggests a greater proportion of patients with the characteristic receiving the first regimen of the comparison

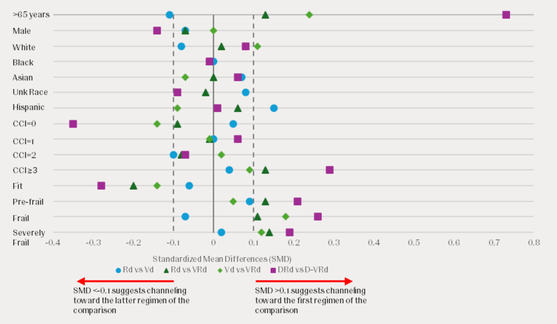


Figure 3: Love plot comparing baseline characteristics by first-line regimens, Optum, where SMD>0.1 suggests a greater proportion of patients with the characteristic receiving the first regimen of the comparison

Distribution of first-line regimens by age group

- Overall, findings were consistent in both databases for first-line regimens according to age group (Figures 4 & 5).
  - Utilization of VRd decreases with age, with a substantial shift occurring around age 75-80 years.
  - Utilization of DRd increases with age, with a substantial shift around age 55-65 years.
  - Utilization of D-VRd decreases with age, with a substantial shift around age 60-70 years.

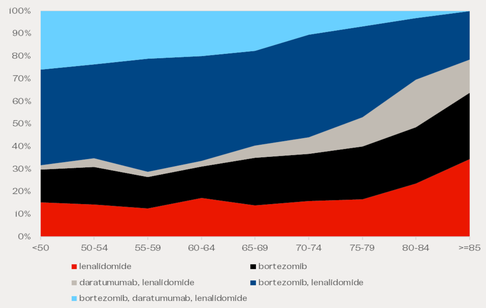


Figure 4: Area chart showing distributions of first-line regimens by age, HealthVerity

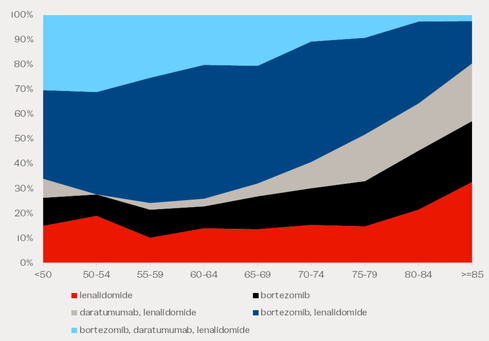


Figure 5: Area chart showing distributions of first-line regimens by age, Optum

Limitations

- Potential bias exists due to potential incomplete capture of TIE status and algorithms used to define frailty and LOT.

1. Voss EA, Makadia R, Matcho A, et al. Feasibility and utility of applications of the common data model to multiple, disparate observational health databases. J Am Med Inform Assoc. 2015;22(3):553-64.
2. Fortin SP, Reps J, Ryan P. Correction to: Adaptation and validation of a coding algorithm for the Charlson Comorbidity Index in administrative claims data using the SNOMED CT standardized vocabulary. BMC Med Inform Decis Mak. 2023 Jun 15;23(1):109.
3. Duchesneau ED, Shmuel S, Faurot KR, Park J, Musty A, Pate V, Kinlaw AC, Stürmer T, Yang YC, Funk MJ, Lund JL. Translation of a Claims-Based Frailty Index From the International Classification of Diseases, Ninth Revision, Clinical Modification to the Tenth Revision. Am J Epidemiol. 2023 Nov 10;192(12):2085-2093.
4. Dymshyts D. Multiple myeloma treatment episodes in EPISODE: Creation logic. Updated on Oct 30, 2025. Accessed on Oct 30, 2025. Accessed at https://github.com/OHDSI/ETL-LambdaBuilder/blob/MM-treatment-algorithm/docs/MM_treatment_Episodes.md.

Multiple Myeloma

Presented at the 67th American Society of Hematology Annual Meeting from December 6-9, 2025 in Orlando, Florida